



THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Ho Keung, Tse.
Application Number : 08/ 587, 448
Filing Date : 12/01/95
Group Art Unit : 2202
Examiner : Laufer, P

RECEIVED

NOV 4 1997

GROUP 2200

P.O. Box 54670,
North Point Post Office,
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Tel: (852) 7889,0013.

Hon. Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Sir,

Submission of priority document

Submitted herewith is a certified copy of my British application GB 9522731.0,
please include it in my file of application as a priority document.

Thanks for your attention !

Date: Oct., 30, 97

Signature of Applicant :

*13/ Priority
Paper
11-6-97
Hoker*



The
**Patent
Office**

#13

The Patent Office
Concept House
Cardiff Road
Newport
South Wales
NP9 1RH

I, the undersigned, being an officer duly authorised in accordance with Section 74(1) and (4) of the Deregulation & Contracting Out Act 1994, to sign and issue certificates on behalf of the Comptroller-General, hereby certify that annexed hereto is a true copy of the documents as originally filed in connection with the patent application identified therein.

In accordance with the Patents (Companies Re-registration) Rules 1982, if a company named in this certificate and any accompanying documents has re-registered under the Companies Act 1980 with the same name as that with which it was registered immediately before re-registration save for the substitution as, or inclusion as, the last part of the name of the words "public limited company" or their equivalents in Welsh, references to the name of the company in this certificate and any accompanying documents shall be treated as references to the name with which it is so re-registered.

In accordance with the rules, the words "public limited company" may be replaced by p.l.c., plc, P.L.C. or PLC.

Re-registration under the Companies Act does not constitute a new legal entity but merely subjects the company to certain additional company law rules.

Signed

Dated

7th August 1997.

2d, 2e and 2f: If there are further applicants please provide details on a separate sheet of paper.

☐ **Second applicant (if any)**

2d If you are applying as a corporate body please give:

Corporate name

Country (and State
of incorporation, if
appropriate)

2e If you are applying as an individual or one of a partnership please give in full:

Surname

Forenames

2f **In all cases,** please give the following details:

Address

UK postcode
(if applicable)

Country

ADP number
(if known)

3 An address for service in the United Kingdom must be supplied

Please mark correct box

3 Address for service details

3a Have you appointed an agent to deal with your application?

Yes ☐

No ☒ → go to 3b

↓
please give details below

Agent's name

Agent's address

Postcode

Agent's ADP
number

3b: If you have appointed an agent, all correspondence concerning your application will be sent to the agent's United Kingdom address.

3b If you have not appointed an agent please give a name and address in the United Kingdom to which all correspondence will be sent:

Name Ho KEUNG, TSE

Address P.O. BOX 54670,
NORTH POINT POST OFFICE

H.K.

Postcode

ADP number
(if known)

Daytime telephone
number (if available)

For official use

08 NOV 1995 104201
P01/7700 25.00

Your reference

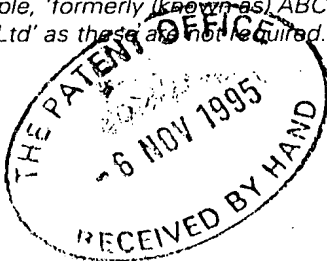
9522731.0

Notes

Please type, or write in dark ink using CAPITAL letters. A prescribed fee is payable for a request for grant of a patent. For details, please contact the Patent Office (telephone 0171-438 4700).

Rule 16 of the Patents Rules 1990 is the main rule governing the completion and filing of this form.

② Do not give trading styles, for example, 'Trading as XYZ company', nationality or former names, for example, 'formerly (known as) ABC Ltd' as these are not required.



Warning

After an application for a Patent has been filed, the Comptroller of the Patent Office will consider whether publication or communication of the invention should be prohibited or restricted under Section 22 of the Patents Act 1977 and will inform the applicant if such prohibition or restriction is necessary. Applicants resident in the United Kingdom are also reminded that under Section 23, applications may not be filed abroad without written permission unless an application has been filed not less than 6 weeks previously in the United Kingdom for a patent for the same invention and either no direction prohibiting publication or communication has been given, or any such direction revoked.

The
**Patent
Office**

Request for grant of a Patent Form 1/77

Patents Act 1977

① **Title of invention** APPARATUS FOR PREVENTING COMPUTER PROGRAM SUPPLIED THROUGH NETWORKS OR COMMUNICATION CHANNELS OR THE LIKE FROM UNAUTHORISED USE AND METHOD THEREFOR.

② Applicant's details

☐ **First or only applicant**

2a If you are applying as a corporate body please give:
Corporate name

Country (and State
of incorporation, if
appropriate)

2b If you are applying as an individual or one of a partnership please give in full:

Surname TSE

Forenames HO KEUNG

2c In all cases, please give the following details:

Address P.O. Box 54670,
NORTH POINT POST OFFICE,
H.K.

UK postcode
(if applicable)

Country

ADP number
(if known)

5879648001

4 Reference number

- 4 Agent's or applicant's reference number (if applicable)

5 Claiming an earlier application date

- 5 Are you claiming that this application be treated as having been filed on the date of filing of an earlier application?

Yes ☐ No ☒ → go to 6

↓
please give details below

- ☐ number of earlier application or patent number

- ☐ filing date (day month year)

- ☐ and the Section of the Patents Act 1977 under which you are claiming:

15(4) (Divisional) ☐ 8(3) ☐ 12(6) ☐ 37(4) ☐

6 Declaration of priority

- 6 If you are declaring priority from previous application(s), please give:

Country of filing	Priority application number (if known)	Filing date (day, month, year)
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Please mark correct box

Please mark correct box

6 If you are declaring priority from a PCT Application please enter 'PCT' as the country and enter the country code (for example, GB) as part of the application number.

Please give the date in all number format, for example, 31/05/90 for 31 May 1990.

- 7 The answer must be 'No' if:
- any applicant is not an inventor
 - there is an inventor who is not an applicant, or
 - any applicant is a corporate body.

8 Please supply duplicates of claim(s), abstract, description and drawing(s).

Please mark correct box(es)

- 9 You or your appointed agent (see Rule 90 of the Patents Rules 1990) must sign this request.

Please sign here →

A completed fee sheet should preferably accompany the fee.

7 Inventorship

7 Are you (the applicant or applicants) the sole inventor or the joint inventors?

Please mark correct box

Yes ☒

No ☐

A Statement of Inventorship on Patents Form 7/77 will need to be filed (see Rule 15).

8 Checklist

8a Please fill in the number of sheets for each of the following types of document contained in this application.

Continuation sheets for this Patents Form 1/77

0

Claim(s)

0

Description

6

Abstract

0

Drawing(s)

0

8b Which of the following documents also accompanies the application?

Priority documents (please state how many)

0

Translation(s) of Priority documents (please state how many)

0

Patents Form 7/77 – Statement of Inventorship and Right to Grant (please state how many)

0

Patents Form 9/77 – Preliminary Examination/Search

0

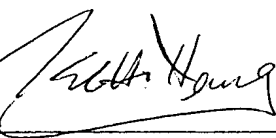
Patents Form 10/77 – Request for Substantive Examination

0

9 Request

I/We request the grant of a patent on the basis of this application.

Signed



Date

4

11

95

(day

month

year)

Please return the completed form, attachments and duplicates where requested, together with the prescribed fee to:



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TITLE : APPARATUS FOR PREVENTING COMPUTER PROGRAM SUPPLIED
THROUGH NETWORKS OR COMMUNICATION CHANNELS OR THE LIKE FROM
UNAUTHORISED USE AND METHOD THEREFOR.

INVENTOR : HO KEUNG, TSE.

APPARATUS FOR PREVENTING COMPUTER PROGRAM SUPPLIED
THROUGH NETWORKS OR COMMUNICATION CHANNELS OR THE
LIKE FROM UNAUTHORISED USE AND METHOD THEREFOR

FIELD OF THE INVENTION

The present invention relates to protection of commercial computer programs supplied through networks or communication channels and particularly, to protection of such commercial computer programs against unauthorised use.

BACKGROUND OF THE PRESENT INVENTION

Computer programs available in the market are typically stored in floppy disks or the like, which although intended to be used by the one who buys it only, admits of an unlimited number of times of copying and the number of actual users can be very large. At present, there is no way to well protect this proprietary rights of the software suppliers.

And also, existing softwares selling systems consists of dealers and agents which should be undesirable because it increases softwares selling price.

Therefore, it is an object of the present invention to provide apparatus and method to enable computer programs to be sold to user directly through networks or communication channels and to prevent unauthorised use of such computer programs.

SUMMARY OF THE INVENTION

According to one aspect of the present invention, there is provided in a computer a means for performing a predetermined algorithm on data supplied thereto from a running program, and supplying the result thus obtained to the running program, for the purpose of authenticating the identity of the computer by the running program.

According to another aspect of the present invention, there is provided a method for supplying computer programs to computers in which comprising the steps of

DETAILED DESCRIPTION OF THE PRESENT INVENTION

According to the present invention, there is provided a computer with a part thereof for performing a predetermined algorithm on data supplied thereto from a running program, and supplying the result thus obtained to the running program. The part T may be in the form of a module, insertion card or the like and comprising a processing means 1 which may be a microprocessor operating independent of the computer or in other words, the computer and the part each has a respective processing means; and a ROM 2 or the like for storing the algorithm.

Desirably, processing means 1 and the ROM 2 should be incorporated in a single IC and contained in a tamper-resistant housing so that data in the ROM 2 cannot be

accessed directly and can be safeguarded by the processing means.

Alternatively, part T may well be in the form of a authentication program AA stored in the harddisk or the like of the computer, of which details will be described later.

When a program running on the computer is to determine whether the computer is the one it is intended, for eg., by its proprietor, to run, a part of it say, subprogram A, generates a random number and sends it to part T. In the case part T is in module form, the random number is sent to the processing means 1 by writing to an input port thereof. In the case part T is an authentication program AA, it will be caused to be executed by subprogram A and the random number will be used as input parameter. Part T, in response thereto, performs a predetermined algorithm say, AAA, on said random number, and put the result thus obtained in an output port thereof for to be received by subprogram A. Subprogram A may 1) performs an identical algorithm on the random number to see if it gets the same result, or 2) performs a reverse algorithm on the result to get the random number back. In both cases, if it is failed, subprogram A will know that the computer is not the one it intended to run and causes at least a part of the program to function abnormally.

According to another aspect of the present invention, there is provided a method for supplying computer programs to computers and a source computer which contains a storage

of the computer programs 3 each includes a subprogram A, as described hereinabove, with the authentication algorithm therein missing and a storage of computer identities and authentication algorithms corresponding respective thereto 4 ; and is capable of communicating with the computer through a communication link, for eg., a telephone network.

When it is desired that a particular program is to be received, by a user computer, from the source computer, the computer will send a request C which includes identifying information D for identifying the computer program to be received and an identity E of its own, through the communication link to the source computer. The source computer, in response thereto, generates a random number and sends it to the user computer. Then the user computer will, under control of its operating system, transfer the random number to part T which will perform a predetermined algorithm AAA on that random number and the result thus obtained will be supplied by the user computer to the source computer.

The source computer may 1) perform an authentication algorithm stored in storage 4 and corresponds to the identity E received, on the random number to see if it gets the same result, or 2) perform a reverse algorithm on the result to get the random number back. If the result is favourable, then the identity E is being authenticated and program can be supplied.

It should be noted that the result from part T can also

be treated as an user authorisation command for authorizing a payment to be transferred from an user account to the program proprietor or the like.

In the foregoing, the same authentication algorithm AAA is being used by the source computer as well as the program to be supplied to authenticate the computer identity of a particular user computer. This has an advantage that it is more economic and computer user has to take responsibility to prevent the authentication program AA or program(s) being supplied from the source computer from being copied, otherwise someone else may get know of the authentication algorithm therein and may use his account.

In case 2 separate algorithms is desirable for to be used by the source computer and those programs supplied respectively, then part T should be in module form or both algorithms should be incorporated in a same program and be indistinguishable.

Then, the source computer incorporates the authentication algorithm AAA which corresponding to the computer identity received and which retrieved from storage 4, into the program identified by the identifying information and which retrieved from storage 3. Then sends the program to the computer.

It should be noted that each of the authentication algorithms in storage 4 may be in the form of a subprogram and may be divided into segments each incorporated into a predetermined part of the program to be received and each

interconnected by a JUMP instruction or the like, so that it may not be identified from other program data easily.

In addition, each authentication algorithm may desirably consist a plurality of sub-algorithms each use one or more than one parameters and the source computer can generate a great number of algorithms on its own by generating random numbers as those parameters and randomly arranged the sequence of sub-algorithms in different orders.